

What Is Claimed Is:

1. An optical imaging device, in particular an objective for semiconductor lithography, having at least one system diaphragm, the system diaphragm (1) comprising a multiplicity of mobile plates (4, 4') which are rotatably mounted, characterized in that the plates (4, 4') have a spherical curvature.
2. The optical imaging device as claimed in claim 1, characterized in that rotational bearing axes (6, 6') of the plates (4, 4') are aligned with a center of curvature (C) of a sphere (7), and the sphere (7) determines a surface on which the plates (4, 4') are mobile relative to one another.
3. The optical imaging device as claimed in claim 1, characterized in that the plates (4) are arranged mobile in an overlapping fashion on two spherical surfaces (7, 7'), whose centers of curvature (C) are identical.
4. The optical imaging device as claimed in claim 3, characterized in that the two spherical surfaces (7, 7') have a mutual separation A of a few millimeters, preferably $A < 1$ mm.
5. The optical imaging device as claimed in claim 1, characterized in that the plates (4) have a high stiffness.
6. The optical imaging device as claimed in claim 2, characterized in that the plates (4) are each rotationally mounted on the rotational bearing axis (6) by means of solid state articulations (8) in order to rotate the plates (4).

7. The optical imaging device as claimed in claim 1, characterized in that the plates (4) are movable by means of a drive ring (10), the drive ring (10) being mounted rotatably about an optical axis, (3) via solid state articulations (11, 11').
8. The optical imaging device as claimed in claim 7, characterized in that the solid state articulations (11, 11') are designed as solid state articulations (11, 11') which are radially stiff and soft in the rotation direction.
9. The optical imaging device as claimed in claim 7, characterized in that the drive ring (10) is respectively connected to a plate (4) via a drive element (12).
10. The optical imaging device as claimed in claim 9, characterized in that the drive element (12) is connected to the drive ring (10) via a solid state articulation (11').
11. The optical imaging device as claimed in claim 7, characterized in that the drive ring (10) is monolithic with the drive element (12).
12. The optical imaging device as claimed in one of claims 7, 9, 10 and 11, characterized in that the drive ring (10) is formed by a material which has a high stability under alternating load.
13. The optical imaging device as claimed in one of claims 1 to 9, characterized in that a drive unit (10') for moving the plates (4, 4') is arranged outside a gas space (G).

14. The optical imaging device as claimed in one of claims 2 and 6, characterized in that rotational bearings (5, 5') with the rotational bearing axes (6, 6') of the plates (4, 4') are respectively suspended in a diaphragm (13), the rotational bearing axes (6, 6') of the plates (4, 4') being alignable with the center of curvature (C).
15. The optical imaging device as claimed in claim 14, characterized in that control members (15) are provided for aligning the rotational bearing axes (6, 6').
16. The optical imaging device as claimed in one of claims 2 and 6, characterized in that the rotational bearings (5, 5') with the rotational bearing axes (6, 6') of the plates (4, 4') are respectively suspended on a solid state articulation (16), the rotational bearing axes (6, 6') of the plates (4, 4') being alignable with the center of curvature (C).
17. The optical imaging device as claimed in claim 16, characterized in that the solid state articulation (16) is designed as a quadruple articulation.
18. The optical imaging device as claimed in one of claims 14 and 16, characterized in that tactile or optical measuring methods are provided for measurement when aligning rotational bearing axes (6, 6') of the plates (4, 4').
19. A diaphragm having a multiplicity of mobile plates, the plates (4, 4') having a spherical curvature and being rotationally mounted, rotational bearing axes (6, 6') of the plates (4, 4') being aligned with a center of curvature (C) of a sphere (7), and the sphere (7) determining a surface on which the plates (4, 4') are mobile relative to one another.

20. The variable system diaphragm as claimed in claim 21, characterized in that the plates (4, 4') are arranged mobile in an overlapping fashion on two spherical surfaces (7, 7'), whose centers of curvature (C) are identical.
21. The diaphragm as claimed in claim 22, characterized in that the two spherical surfaces (7, 7') have a mutual separation A of a few millimeters, preferably $A < 1$ mm.